



# Effects of Microwave Pulses on Electronics MURI



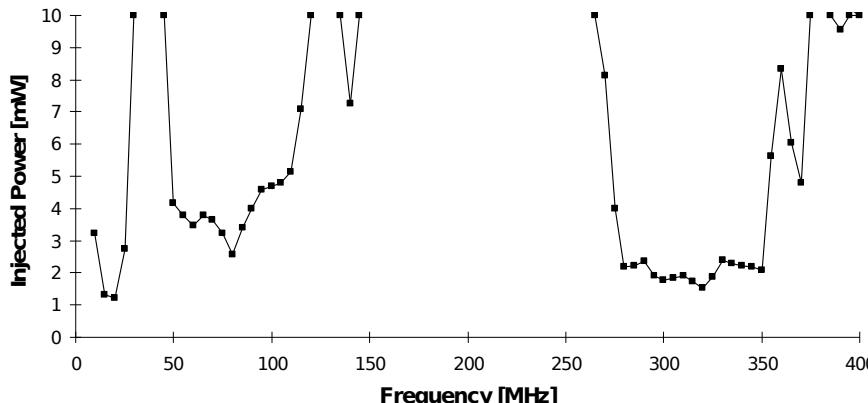
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Example of frequency dependent upset:

Power level which can corrupt data stored in a computer's  
synchronous dynamic random access memory (SDRAM)



## Scientific/technical approaches

- Fabricate ICs with built-in diagnostics
- Develop on-chip sense & protect circuit
- Study potential of chaotic EM waves to produce upset at relatively low power

## MURI Objectives

- Basic study of physical mechanisms whereby HPM pulses upset or damage modern integrated circuits
- Develop models and methodology enabling HPM resistant component, circuit and system design

## Accomplishments

- Successful preliminary attempt to fabricate on-chip Schottky diode
  - On-chip sense and protect circuit designed and is being fabricated
- Corruption of computer SDRAM found to have complex dependence on RF frequency
  - Initiated study of EM delay times for complex enclosures using random matrix theory